

**REMARKS**

By this amendment, claims 1, 3, 5-16, 18-37, 47-64, 67-68, 70, 72-82, 84, and 86-104 are pending, in which claims 2, 4, 17, 38-46, 65-66, 69, 71, 83, and 85 are canceled without prejudice or disclaimer and claims 1, 3, 5-6, 16, 18-19, 49, 68, 70, 72, 82, 84, and 86 are currently amended. No new matter is introduced.

Entry of this amendment is proper after final rejection because independent claims 1, 68, and 82 are amended to incorporate the previously searched and considered subject matter of dependent claims 4, 71, and 85 respectively, and because issues are reduced for appeal. As a result, no new matter and no new issues requiring further search or consideration are introduced.

The final Office Action mailed July 7, 2004 objected to claim 6 for an informality and rejected claims 1-2, 16-19, 38-41, 43, 45-46, 60-64, 66-69, and 82-86 under 35 U.S.C. § 102 as anticipated by the newly-cited *Konishi* (US 6,101,010); claims 3, 42, and 70 as obvious under 35 U.S.C. § 103 based on *Konishi*; claims 4-15, 47-48, 65, 71-81 over *Konishi* in view of *Shiragaki* (US 5,457,556); claims 27-30, 44, and 94-97 over *Konishi* in view of *Fatehi et al.* (US 5,892,606); claims 35-36 and 102-103 over *Konishi* and *Fatehi et al.* in view of *Shiragaki*; claims 20-26, 49-52, and 87-93.

The Allowance of claims 31-34, 37, 53-59, 98-101, and 104 is noted with appreciation.

Claim 6 is amended to cure an objection as to an informality as helpfully suggested by the Examiner.

## I. CLAIM 60

The rejection of claim 60 under 35 U.S.C. § 102 is respectfully traversed because *Konishi* does not disclose the features of the claim. For example, claim 60 recites the following:

60. (Previously Presented) In an optical network comprising at least one optical switch, a method for determining optical path integrity, comprising the steps of:

- providing at a first port of the optical switch at least one optical signal having associated therewith at least one supplemental signal, wherein the one supplemental signal includes a modulation applied to the one optical signal;

- directing the optical switch to couple the first port to a second port of the optical switch;

- at the second port, detecting the supplemental signal and determining a first detected value for at least one attribute of the supplemental signal;

- at the second port, detecting the supplemental signal and determining a second detected value for the attribute of the supplemental signal, wherein the second detected value is determined at a different time than the first detected value; and

- determining whether the carrying of the optical signal in the network has varied based at least upon *comparison of the first detected value to the second detected value*.

As recited, claim 60 thus includes a “comparison of the first detected value to the second detected value.” This feature is not shown in *Konishi*, and, in fact, differs from *Konishi*’s principle of operation.

*Konishi*’s brief disclosure is directed to a pass-monitoring apparatus for an optical network system. Referring to FIG. 1, the *Konishi* system includes a wave-division multiplexed (WDM) transmitter 1 that is coupled to an “optical external modulator 2 [*sic* for 21] for intensely modulating a WDM optical signal by a monitoring signal” generated from an oscillator 22 at a particular frequency so that “the monitoring signal serves as a discriminating one for each of the optical transmission lines” (col. 2:23-25 and 35-36). Turning now to FIG. 2, *Konishi* depicts the receiving part 4 which includes variable band-pass filters 431 etc. coupled to detectors 441 etc. such that the alarm processing circuit 46 “discriminates the presence of the fails [*sic* failures?] of

the optical transmission lines or the matrix switch, based on comparison of output levels of the detectors **441** to **443** with the switching information signal **101**” (col. 2:63-66). More precisely, the “detectors **441** to **443** respectively compare the levels of the monitoring signals with their threshold levels and generate level-detecting signals, when the formers are higher than the latters” (col. 3:15-18). Thus, *Konishi* describes a system in which a monitoring signal is detected and compared against threshold levels. *Konishi* does not disclose, however, a “comparison of the first detected value to the second detected value,” as recited in claim 60.

The portion of *Konishi* cited in the Office Action does not support the rejection. For example, the Office Action stated that “*Konishi* discloses that the supplemental signal may be detected and examined repeated during the operation of the switch (column 3, lines, 19-30).” Regardless of how many times the monitoring signal of *Konishi* might be detected and compared, the only comparison disclosed in *Konishi* for the monitoring signal is that “with their threshold levels” (see col. 3:16). The cited paragraph of col. 3:19-30, on the other hand, does not mention any comparison of the monitoring signals, only whether the level-detecting signals are detected or whether the alarm processing continues generate the alarm signal **102**.

The Office Action further contended, “It would be well understood that *Konishi* discloses that the user *may* determine that the carrying of the optical signal in the network has varied based at upon comparison of the first detected value to the second detected (i.e., if a second detected value indicated an error had occurred since the detecting of the first value, and the carrying of the signal had ‘varied’)” (emphasis added). As a preliminary matter, claim 60 is rejected under 35 U.S.C. § 102, so what could be gleaned from *Konishi* as to what a user “may” do is irrelevant to the question of anticipation. Furthermore, that paragraph in particular and *Konishi* in general is silent as to what comparison a user might do, not to mention whether such a speculative comparison involves the supplemental signal rather than, e.g., the alarm signal **102**.

In fact, page 21 of the Office Action separately recognized *Konishi*'s lack of disclosure of this feature in the statement of the rejection for claim 4, arguing that it would have been obvious "to establish a first value of the supplemental signal by detecting it prior to its entering the switch using a detector such as taught in Shir[a]gaki *as an alternate way* to establish the original value of the supplemental signal in the system disclosed by *Konishi*" (emphasis added).

Accordingly, withdrawal of the rejection of claim 60 for anticipation is respectfully requested.

## II. CLAIMS 1, 3, 5, 16, 18-19, 61-65, 67-68, 70, AND 72

Neither *Konishi* nor *Shiragaki* teach or otherwise suggest the limitations of claims 1, 3, 5, 16, 18-19, 61-65, 67-68, 70, and 72. Regarding claims 1, 3, 5, 16, and 18-19, independent claim 1, amended to include the subject matter of dependent claim 4, recites:

wherein the optical switch receives information about at least one attribute of the detected supplemental signal from the supplemental signal detector and issues a fault indication if the attribute does not meet an expected criterion, and  
wherein the criterion is determined based upon *at least one previously detected value of the attribute*.

*Konishi*, however, only discloses that alarm signal **102** is generated by comparing "the levels of the monitoring signals with their threshold levels" (col. 3:16-17), not "based upon at least one previously detected value of the attribute" as recited in claim 1. This lack of disclosure had been recognized in the statement of the rejection of claim 4, 65, and 71, p. 21, arguing that "it would have been obvious "to establish a first value of the supplemental signal by detecting it prior to its entering the switch using a detector such as taught in Shir[a]gaki as an alternate way."

*Shiragaki*, however, does not actually teach or suggest detecting a supplemental signal and issuing a fault notification in the manner claimed. Although the Office Action, p. 14, relied on *Shiragaki*'s fault detector **26** for "another supplemental signal detector as taught by *Shiragaki*

in the system disclosed by Konishi,” the limited disclosure of this component in *Shiragaki* indicates that fault detector 26 is *not* configured to detect the monitoring signals of *Konishi*.

Specifically, *Shiragaki*, col. 5:57-62 states:

Fault detector 26 is further connected to the outputs of all demultiplexers 12 and to the inputs of all multiplexers 14 and to strategic points of the internal structure of switch element 13 to monitor demultiplexed data streams and informs the network center of the location of a failure on a lower level of multiplex.

Thus, the purpose of fault detector 26 is “to monitor demultiplexed data streams” for errors. There is no disclosure in *Shiragaki*, however, that fault detector 26 monitors a supplemental signal that “includes a modulation applied to the optical signal” as recited in claim 1. Therefore, even if one were to add a fault detector 26 to provide “further fault detection in the system” as suggested in the Office Action (p. 14), the result would be to use a fault detector that monitors demultiplexed data streams, but not “information about at least one attribute of the detected supplemental signal from the supplemental signal detector” about which *Shiragaki* is oblivious.

As for claims 68, 70, and 72, independent claim 68 recites:

attribute evaluating means for determining whether the value of the attribute meets at least one criterion; and  
fault indicating means for issuing a fault indication based upon whether the value of the attribute meets the criterion, wherein the criterion is determined based upon *at least one previously detected value of the attribute*.

As argued above, neither *Konishi* nor *Shiragaki* teach or otherwise suggest such a criterion determined based upon “at least one previously detected value of the attribute.”

With regard to claims 61-64 and 67, independent claim 61 sets forth “wherein the first value is established by detecting the supplemental signal and determining the first value by measurement”—a feature which both *Konishi* and *Shiragaki* fail to teach or suggest.

## III. CLAIMS 6-15, 47-48, AND 73-81

The purported combination of *Konishi* and *Shiragaki* is also infirm against claims 6-15, 47-48, and 73-81. In particular, independent claim 6 recites a “a first supplemental signal detector coupled to the first optical signal port for detecting a supplemental signal associated with the optical signal”; independent claim 47 provides for “at the first port of the optical switch, detecting the detectable attribute and determining a first detected value for the detectable attribute”; and independent claim 73 sets forth a “a first supplemental signal detecting means coupled to the first optical signal port for detecting a supplemental signal associated with the optical signal.”

The Examiner, p. 14 of the Office Action, is quite correct to recognize that “*Konishi* does not specifically disclose another (i.e., a ‘first’) supplemental signal detector/detecting means coupled to the first optical signal port for detecting the supplemental signal associated with the optical signal.” Moreover, *Shiragaki* also fails to disclose this feature since fault detector 26 is only disclosed “to monitor demultiplexed data streams” with no discussion about detecting either the supplemental signal recited in the claims or *Konishi*’s monitoring signal.

## IV. CLAIMS 20-26, 49-52, 87-93

Applicants respectfully maintain the traversal of the rejection of claims 20-26, 49-52, and 87-93 over *Gerstel et al.* and the commonly-assigned *Fee* because *Gerstel et al.* teaches away from including the signals as taught by *Fee*. In the Response to Arguments (p. 31, emphasis original), the Office contended that:

Examiner maintains that it would have been obvious to a person of ordinary skill in the art to combine a modulated first supplemental signal as taught by *Fee* in the system already including a second supplemental signal as disclosed by *Gerstel et al.* (in order to include further supplemental information in the signal as desired while providing a second supplemental signal specifically for monitoring the operation of the switch, as disclosed by *Gerstel et al.*). In other

words, regarding the rejections of claims 20, 49, and 87, Examiner has combined an additional supplemental signal as taught by Fee into the existing system disclosed by Gerstel et al. but has not asserted *substituting* the supplemental signal of Fee for the supplemental signal of Gerstel et al. Therefore, Examiner respectfully submits that the format or nature of the existing supplemental signal disclosed by Gerstel et al. does not teach away from or preclude the additional of a further supplemental signal as taught by Fee.

As best understood, the Office Action proposes to feed a signal with “a modulated first supplemental signal as taught by Fee” into the demultiplexer **203**, optical switch **204**, multiplexer **205** arrangement of *Gerstel et al.*, upon which a 1.3 $\mu$ m supervisory channel had been combined by driver **201**. Even so, independent claims 20, 49, and 87 recite “at least one optical switching element for causing an optical signal incident along a first optical signal port *to be transmissively coupled* to a second optical signal port,” while the embodiments of the optical switch **204** are disclosed only to be “mechanical, electrooptic, or acoustooptic” (col. 3:62-64), which do not transmissively couple an incident optical signal at least to the extent to sufficiently preserve a supplemental signal that “includes a modulation applied to the optical signal” for taking advantage of the teachings of *Fee*. Thus, one of skill in the art would have to change *Gerstel et al.*’s principle of operation, and such a change is an indication of non-obviousness.

## V. CLAIMS 27-30, 35-36, 94-97, AND 102-103

The obviousness rejection of claims 27-30, 35-36, 94-97, and 102-103 is respectfully traversed because *Fatehi et al.* teaches against the modification of *Konishi* as proposed in the Office Action, which is “to include supplemental signal modifying means as taught by Fatehi et al. in the system disclosed by Konishi for modifying the incoming supplemental signal already disclosed to include further supplemental signal information in order to monitor further aspects of the system as described.”

On one hand, *Konishi* discloses generating a monitoring signal in the transmitter portion of a pass-monitoring apparatus (FIG. 1), which includes a modulator part **2** disposed at the output of an optical coupler **12**, and propagating that signal through an optical transmission line **7**. In FIG. 2, the optical transmission line (here labeled **51-53**) enter a matrix switch **31** and are then sent the receiver part **4** of the pass-monitoring apparatus. On the other hand, claim 27 recites “a supplemental signal modifier coupled to the first optical signal port” and claim 94 provides “supplemental signal modifying means, coupled to a first optical line associated with the first optical signal port,” neither of which is shown in *Konishi* as the Office Action acknowledged (“*Konishi* does not specifically disclose supplemental signal modifying means coupled to a first optical line associated with the first optical signal port” on p. 21).

*Fatehi et al.* teaches against just such a modification: “The method includes the step of individually tagging the various optical carriers with unique identifier signals (i.e., frequency tones) *before they enter the network and/or at the first node within the network*” (col. 2:17-20, emphasis added). By contrast, the matrix switch **31** of *Konishi* is right in the middle of the network, being downstream from optical coupler **21**, but neither “before they enter the network” nor even “at the first node within the network” as urged by *Fatehi et al.*



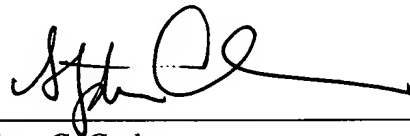
The portion of *Fatehi et al.* cited in the Office Action, pp. 21-22, does not support the rejection. FIG. 2 and col. 4:16-52 relate to *tone removal* ("FIG. 2 shows an alternative embodiment of the invention in which *the identifier tone is removed* from the optical carrier," col. 4:16-18, emphasis added), which would cause *Konishi's* pass-monitoring apparatus to stop working because, after the removal, there is no monitoring signal left to monitor.

Therefore, the present application, as amended, overcomes the objections and rejections of record and is in condition for allowance. Favorable consideration is respectfully requested. If any unresolved issues remain, it is respectfully requested that the Examiner telephone the undersigned attorney at 703-425-8516 so that such issues may be resolved as expeditiously as possible.

Respectfully Submitted,

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